

C<sup>4</sup>

NO:1, wherein said fragment encodes an amino acid comprising at least 500 contiguous amino acids of SEQ ID NO:2 and has MEKK1 activity.. --

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#### REMARKS

Claims 27-52 were pending. Applicant herein canceled claims 27 to 52 and added new claims 53 to 60. Therefore after entry of the amendments made herein claims 53-60 are pending. Applicants respectfully request entry of the foregoing amendments. Amendment to the claims should in no way be construed as acquiescence to any of the Examiner's rejections. The amendments to the claims are being made solely to expedite prosecution of the above-identified application. Support for the amendments lie in the specification and original claims as filed. No new matter has been added by virtue of the amendments made herein.

#### Objection to the claims

Claim 52 is objected to under 37 C.F.R. 1.75 (c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant herein cancelled claim 52 and added new claim 60 directed to substantially the same subject matter but which is an independent claim. Thus, withdrawal of the objection is respectfully requested.

#### Objection to the specification

The specification is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant has herein amended the specification to delete the embedded hyperlink. Withdrawal of the objection is respectfully requested.

**Rejection of the Claims Under 35 U.S.C. § 112, first paragraph**

Claims 27-30, 35-38 and 43-51 are rejected under 35 U.S.C. 112, first paragraph as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The Examiner argues that claim 27 (a,b) and dependent claims 28-30 and 35-38 do not allow one to reasonably conclude that the Applicant had possession of the claimed invention at the time of filing because:

“The specification does not contain any disclosure of the function of all DNA sequences that are 90% or 95% identical to SEQ ID NO:1 or PTA-1836. The genus of cDNAs that comprise these above cDNA molecules is a large variable genus with the potentiality of encoding many different proteins. Therefore, many functionally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus.”

Applicant respectfully disagrees with Examiner’s argument. However, in the interest of expediting prosecution the Applicant has herein cancelled claim 27 (a,b), and has added new claim 53(d). Claim 53(d) is drawn to substantially the same subject matter as claim 27(a), but in order to address the Examiner’s concern that the invention encompasses “many functionally unrelated DNAs” Applicant has amended the claim to more clearly define the invention as a nucleic acid which encodes “a protein having MEKK1 activity.”

There is a strong presumption that an adequate written description of the claimed invention is present when the Application is filed. *In re Wertheim*, 191 USPQ 90, 97 (CCPA 1976). Furthermore a “rejection of an original claim for lack of written description should be rare.” See M.P.E.P 2163 II.A. In *Regents of Calif. vs. Eli Lilly*, the court held that Applicants

are not required to disclose every species member encompassed by a genus and that written description is satisfied by “a precise definition, such as by structure, formula, chemical name, or physical properties, not a mere wish or plan for obtaining the claimed chemical invention.” See *Regents of the University of California v. Eli Lilly*, 43 USPQ2d 1398 (Fed. Cir. 1997).

Applicant asserts the Examiner has failed to establish a prima facie case for lack of written description and that the newly added claims contain a precise definition of the invention based upon the disclosed structure and physical properties.

Applicant asserts that claim 53(d), which is drawn to nucleic acids which are 90% identical to SEQ ID NO:1 and encode for a protein having MEKK1 activity, is sufficiently defined by structural and functional characteristics as to convey to one of skill in the relevant art that the Applicant was in possession of the claimed invention at the time of filing. Applicant believes the claim contains adequate structure as defined by SEQ ID NO:1 and that adequate physical properties are defined by the addition of “*MEKK1 activity*” to the claim.

MEKK1 activity is defined in the specification on page 11, line 17 to page 12, line 8. The disclosure defines MEKK1 activity as either a direct or indirect activity that can include the ability to:

“ . . . mediate (1) activation of I $\kappa$ B kinase which leads to NF $\kappa$ B activation; (2) activation of ERK1 and ERK2 and activation of the c-Myc transcription factor independent of JNK activity; (3) apoptosis by both JNK-dependent and JNK-independent mechanisms; and (4) AP-1 activation via JNK-dependent pathway.”

The MEKK1 activity is also disclosed in working Examples 2 and 3 of the specification which disclose the ability of MEKK1 to activate NF $\kappa$ B and to form a complex with IKK1.

The MEKK1 nucleic acid sequence is identified through out the application, specifically as SEQ ID NO:1. Additionally, non-full length MEKK1 is well characterized in the art.

Furthermore, one could easily identify a sequence with 90% identity with SEQ ID NO:1.

Determining sequence identity is routine to one of skill in the art and is taught on page 18, line 13 to page 20, line 12 of the specification. Given the addition of functional language to the claims, the extensive support found in the specification disclosing the necessary structural and functional requirements, and the teachings in the art, one of skill in the art would appreciate that the Applicant had possession of the invention at the time of filing. Thus, the rejection should not be applied to the new claims.

Examiner rejects claim 27(d), 47, and 43 under 35 U.S.C. 112, first paragraph stating:

“There is no limitation on the structure and function of a nucleic acid or encoded polypeptide. Therefore, the claims are drawn to or depend from an enormous variable genus of DNAs encoding polypeptides comprising 500 amino acids having any function. . .given this lack of description of representative species encompassed by the genus of the claim, the specification fails to sufficiently describe the claimed invention in such full, clear, concise , and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.”

Applicant respectfully disagrees with Examiner's rejection of claims 27(d), 47, and 43. However in order to expedite prosecution Applicant herein cancelled claims 27(d), 47, 43 directed to nucleic acids which encode fragments of a polypeptide, wherein fragments comprises at least 500 contiguous amino acids of SEQ ID NO:2. Applicant herein added new claims 53 (c) and 56 (c) directed to substantially the same invention but has amended the claim to more clearly define the invention as a nucleic acid which encodes a fragment of a polypeptide having “MEKK1 activity.” Additionally for the same reasons addressed above Applicant believes the specifications sufficiently describes the claimed invention in such full, clear, concise and exact terms that a skilled artisan would recognize that applicant was in possession of the claimed invention. Briefly, new claims 53 (c) and 56 (c) are sufficiently defined by structural and functional characteristics as to convey to one of skill in the relevant art that the Applicant was in

possession of the claimed invention at the time of filing. Applicant believes the claim contains adequate structure as defined by SEQ ID NO:1 and that adequate physical properties are defined by the addition of “*MEKK1 activity*” to the claim. Thus the Applicant respectfully asserts that the rejection should not be applied to the new claims.

The Examiner rejected claims 27-30, 35-38 and 43-52 under 35 U.S.C. 112 first paragraph, because the specification “while being enabling for a DNA encoding a fragment of SEQ ID NO:2 consisting of at least 500 amino acids thereof, does not reasonably provide enablement for a DNA encoding a polypeptide or fusion protein comprising at least 500 amino acids of SEQ ID NO:2 wherein said polypeptide fusion protein has no known activity.” Furthermore the Examiner states that the “specification does not support the broad scope of the claims which encompass unlimited numbers of DNAs encoding polypeptides or fusion proteins of undefined structures and function.”

Applicant respectfully disagrees with Examiner’s rejection of claims. However, in the interest of expediting prosecution Applicant herein cancelled the rejected claims directed to nucleic acids encoding amino acid fragments comprising 500 contiguous amino acids of SEQ ID NO:2. Applicant herein added new claims 53(c) and 56(c) directed to 500 contiguous amino acid fragments having “*MEKK1 activity*.” It is believed that the additional function language more clearly defines the Applicant’s invention and fully addresses the Examiner’s rejection. Applicant asserts that given the predictability of the art, guidance in the specification, breadth of the claims, and the amount of experimentation necessary to practice the invention, one of skill in the art is enabled to practice the invention without undue experimentation.

Applicant agrees that the factors to be considered in determining whether the specification meets the enablement requirement is whether one of skill in the art can make and use the invention without undue experimentation. *In re Wands* 858 F.2d 731. They include: (1) the

quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of these in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *Id.*

Applicant asserts that new claims 53 (c), and 56 (c), directed to nucleic acids which encode fragments of a polypeptide comprising the amino acid sequence of SEQ ID NO:2 wherein said fragment contains at least 500 contiguous amino acids of SEQ ID NO:2 and have MEKK1 activity provides sufficient structure and function as to fully enable one of skill in the art to make and/or use the invention. Applicant asserts that the functions of the DNA fragments are fully taught throughout the specification. The function of MEKK1 is known from the teachings in the art and the teachings present in the specification, particularly working Examples 1, 2 and 3. Example 1 teaches the cloning of human MEKK1. Example 2 measures MEKK1 activation of NFkB using an NFkB reporter assay. Example 3 teaches that MEKK1 forms a complex with IKK1. Additionally, the disclosure teaches that MEKK1 activity is either a direct or indirect activity that can include the ability to:

“... mediate (1) activation of IkB kinase which leads to NFkB activation; (2) activation of ERK1 and ERK2 and activation of the c-Myc transcription factor independent of JNK activity; (3) apoptosis by both JNK-dependent and JNK-independent mechanisms; and (4) AP-1 activation via JNK-dependent pathway.”

One of skill in the art is fully enabled to practice the invention without undue experimentation in light of the art and teachings present in the disclosure.

Applicant respectfully disagrees with Examiner's statement that “the specification does not support the broad scope of the claims which encompass unlimited number of DNAs encoding polypeptide or fusion proteins of undefined structures and functions”. First, at least 500

contiguous amino acids of SEQ ID NO:2 provides a significant amount of structure for one of skill to practice the invention without undue burden. The nexus between MEKK1 activity and structure is defined in the specification. For example the specification teaches that portions of SEQ ID NO:2 perform various MEKK1 functions and include the MEKK1 activation loop, as defined on page 8 line 23 to 27, and catalytic domains, as defined on page 26 lines 18 to 30. Furthermore the functional language included in the newly added claims, the teachings of the specification, and the extensive teachings in the art on the function of non-full length MEKK1 in regulating cell survival and apoptosis via the activation of the Activator Protein-1 response and the NFkB pathway, fully enable one of ordinary skill in the art to practice the invention without undue experimentation.

Therefore based upon the support, direction and guidance, the high level of skill of one in the art, and the methodology known in the art, Applicant asserts one of ordinary skill in the art is enabled to make/use the invention without undue experimentation. Thus, the rejection should not be applied to the new claims.

Claims 27-52 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The examiner states that

“The specification discloses that said plasmid was deposited on May 18, 2000 under the terms of the Budapest Treaty (paragraph bridging pages 9 and 10). However it is not apparent whether the deposit is readily available to the public.”

As required under 37 C.F.R. §1.804(a), Applicant states herein that the plasmid containing the full length nucleotide sequence encoding human MEKK1 has been deposited with the ATCC on May 18, 2000 as Accession Number PTA-1836, is a plasmid specifically identified in U.S. Serial No. 09/697898. This deposit was made under the conditions of the Budapest

Treaty and complies with the preservation and public disclosure requirements of M.P.E.P. 608.01 (p) (C). Applicant further states herein, in accordance with 37 C.F.R. §1.808(a), that access to the deposit will be available during pendency of the above-referenced application to one determined by the Commission to be entitled thereto under §1.14 and 35 U.S.C. 122, and that the deposit will irrevocably and without restriction or condition be released to the public upon issuance of a patent. Applicant respectfully requests that the Examiner withdraw the rejection.

**Rejection of the Claims Under 35 U.S.C. § 112, second paragraph**

Claims 27, 31, 43-45 are rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27 (a, b) are rejected because “without knowing the sequence of said insert, it is impossible to know the metes and bounds of the sequences encompassed by the claim.” Applicant respectfully traverses the Examiners argument. Applicant herein has cancelled claim 27 (a,b) and has added new claims 53 (f), 56 (f), and 57 (f) directed to substantially the same invention. Applicant asserts that the metes and bounds of the new claims are clearly defined. The claim language must be analyzed, not in a vacuum, but in light of: (a) the content of the particular application disclosure; (b) the teachings of the prior art; and (c) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. Applicant directs the Examiner’s attention to the paragraph spanning page 9, line 27 to page 10, line 4, of the specification where it is clearly disclosed that the plasmid containing the nucleotide sequence encoding human MEKK1 was deposited with ATCC



on May 18, 200 as Accession Number PTA-1836. Applicant asserts that the rejection should not be applied to the new claims.

Claims 31, 51, and 52 are rejected as being “confusing as reciting accession Number PTA-1835”. Claims 31, 51, and 52 were herein cancelled. Applicant respectfully requests the Examiner withdraw the rejection.

Claims 43-50 are rejected for recitation of “biologically active portion”, and defined by non-limiting examples in terms of both its structure and function rendering the metes and bounds of the term unascertainable”. Applicant respectfully disagrees with the Examiner’s rejection but in the interest of expediting prosecution herein cancelled claims 43-50 and added new claims 53 (c), 56 (c), and 57 (c) directed to substantially the same subject matter but reciting *MEKK1 activity* rather than biologically active portion. The MEKK1 activity is clearly defined on page 11, line 8 to page 12, line 10, in Examples 2 and 3, and is well known in the art. Thus, the rejection should not be applied to the new claims.

Claim 43 is rejected for being unclear because “the scope of polypeptides encoded by the nucleic acid molecule of claim 43 is different from the scope of polypeptides encoded by the nucleic acid molecule of claim 27”. Applicant herein cancelled claim 43 and added new claim 53 (c) which is directed to substantially the same subject matter but is not dependent on claim 27. Applicant respectfully requests that the Examiner withdraw the rejection.

Claim 51 is rejected because it “is confusing as drawn to a method for producing a polypeptide by culturing the host cell of claim 29.” Applicant herein cancelled claim 51 and added new claim 60 which is not dependent from claim 29. Thus, Applicant respectfully requests the Examiner withdraw the rejection.

Claim 52 is rejected as being “confusing as drawn to a method for producing a polypeptide by culturing the host cell of claim 33.” Applicant herein cancelled claim 52 and

added new claim 60 which is not dependent from claim 33. Applicant respectfully requests the withdrawal of the rejection.

**Conclusion**

Applicant respectfully submits that the present claims are allowable. Should the Examiner find that there are any outstanding issues or that an interview would be helpful to further prosecution of this application, he is invited to telephone the undersigned at his convenience. This paper is being filed timely. No fees or extensions of time are required. In the event any additional extensions of time are necessary, the undersigned hereby authorizes the requisite fees to be charged to Deposit Account No. 501668.

Entry of the remarks made herein is respectfully requested.

Respectfully submitted,

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